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NEW FRIENDS IN A FAMILIAR SETTING

Dr. Frits W. Went with Friends of the Garden officers, Mrs. William R. Bascom and John R. Averill, enjoying a March snow at the Garden.

Cover photo shows Dr. F. W. Went with new officers of Friends of the Garden, John R. Averill, president, and Mrs. William R. Bascom, vice-president.

The new officers and increased benefits and activities for the Friends were announced in March at a preview of the Spring Flower Show. An office and reception room for Friends are now located at the main gate, and plans are being made for volunteer programs and enlarged membership. Because of increased costs, the mimimum annual fee for membership in the Friends was advanced from $5 to $10.

Dudley French, Trustee emeritus, was honored at the March announcement party for his devoted service to the Friends organization.

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PEAT FOR YOUR GARDEN

HENRY N. ANDREWS, JR.

THE Gaspé peninsula of eastern Canada is a region of rapidly growing popularity with American motorists. One may be a bit more inclusive and say that the coast line from southern Maine to Quebec City, for those who love the hills and the sea in close proximity, is one of the longest and loveliest stretches that can be traversed by automobile. Although there is much uniformity in topography and vegetation throughout the entire region, each bend in the road—and the bends are legion—offers something a little different; there are vast stretches of spruce forests producing rivers of pulp logs, innumerable charming fishing villages, and water that is just a little too cool to swim in but so blue you can't resist giving it a try. Most travelers will probably agree that the climax comes at the village of Percé far out at the tip of the peninsula, but there are still a hundred miles or more of unspoiled northern beauty whether one remains with the coastal route or takes the inland one cutting across one corner of the Gaspesian Park.

Then continuing in a southwesterly direction along the south shore of the St. Lawrence gulf, headed in the general direction of Quebec City, the terrain becomes somewhat less rugged. The hills are long and rolling, but to add variety, far to the north across the river lies the southern fringe of the Laurentian highlands—dashed with the first snow of winter if one happens to see them a little late in the season.

The vegetation now offers a faint suggestion that the Arctic is not far away and one of the richest experiences for the gardener or botanist still lies ahead, for from St. Anne-des-Monts for about three hundred miles on to Quebec one passes vast level stretches of bog lands where, for several thousands of years, unique communities of plants have been growing, dying, and building up deposits of peat that are now being exploited to the economic advantage of industrious Canadians and the horticultural benefit of American gardeners.

Bogs vary in character. They range in size from a few acres to ten thousand. In some there is little else other than Sphagnum (peat moss) while in others there is quite a diverse flora. The bog may be a lake in the last stage of being filled in or it may be a very level, wet stretch of land on which plants have been growing for centuries. Since this is not a learned discourse on bogs in general, my discussion will be confined to just one. In the course of an excursion following the recent Botanical Congress in Montreal, the writer had an oppor-

tunity, with an international group of botanists, to visit a bog near the town of Rivière de Loup. It is representative of the Gaspé boglands and since much of the peat that is mined there is shipped into St. Louis it may be taken as typical from a horticultural standpoint.

The Rivière de Loup bog covers about 7,000 acres of very nearly level land. Only a portion of it is shown, extending from left to right through the center of the picture (photo 1); the packing plant may be seen at the left and the conspicuous long rows are stacks of drying peat.

A portion of the Rivière de Loup peat bog stands out as a broad band through the photo from left to right. The southern Laurentian highlands appear faintly in the distance.

Descending the hillside to an untouched part of the bog we find it to be a unique living organism composed of a group of plants that are in large part adapted to this particular environment, although there are also a few misfits. The dense knee-high vegetation (photo 2) consists for the most part of heath family plants with the following predominating: sheep laurel *(Kalmia angustifolia)*, Labrador tea *(Ledum groenlandicum)* and bog rosemary *(Andromeda glaucophylla)*. Scrambling through these plants is a fairly dense growth of the small cranberry *(Vaccinium oxycoccus)*. Forming the basal mat that one actually walks on is a thick, moist mattress of mosses, three species being most abundant: the true peat moss *(Sphagnum)*,

The living bog. Sheep laurel, Labrador tea and bog rosemary make up the conspicuous low shrub element; larch and spruce trees appear in the background.

the hair-cap moss *(Polytrichum)* and a species of *Hypnum,* a plume moss or one closely related to it. Also admixed with these is a liberal sprinkling of Cladonia, a delicately branching, gray-green lichen sometimes known as reindeer "moss". A few other plants are found with a little searching—pitcher plants are scattered here and there over the bog, cotton grass and the round-leaved sundew may be encountered, as well as blueberries, birch and alder. The trees that appear in the background are larches and spruce; they may occur scattered individually or occasionally fairly dense stands have taken over on apparently slightly higher parts of the bog. These are among the misfits of the bog vegetation; they rarely attain a height of more than 20 or 30 feet, apparently finding the situation a bit too moist for their liking. The whole life of the bog is in fact largely regulated by the water content. If the water level is a little too high most of the woody plants find it unsuitable, or if the bog is drained, naturally or artificially, the moss growth slows down and the shrubs and trees take over more or less completely.

All of these plants contribute to a greater or less degree to the accumulation of plant debris—leaves, stems, roots and pollen which ultimately become peat. The climatic requirements are, however, quite critical for, in addition to the right amount of moisture,

the weather must be warm enough to allow quite vigorous growth for a few months during the year yet cool enough so that the plant debris will only partially decay.

Only a few inches below the moss-lichen-cranberry carpet is the peat itself. There is no soil in the usual sense; very little mineral matter is available to the plants and this in itself would inhibit the plant growth. We may move next, then, to a portion of the bog that is being "harvested". Here (photo 3) we find the living vegetation has been stripped away and the light-chocolate brown peat exposed. This varies in thickness in the Rivière de Loup bog from four to thirty feet and recalling that it extends over 7,000 acres some idea of the quantity of peat is made evident. This is only one of many such bogs found along the south side of the St. Lawrence between Quebec City and the tip of the peninsula.

Due chiefly to the problem of drainage, only the top four feet of peat is removed. It is then cut into blocks that measure about 16 × 7 × 6 inches and stacked up to dry, ridding the raw peat of most of its water content being one of the major problems of

The vegetation has been stripped off and about four feet of peat cut out leaving the broad channel through the right side of the photo. At the left are stacks of drying peat.

production. The texture of the fresh peat seemed to me most aptly compared with partially rotted rope that has been firmly matted together. We were informed that it is allowed to remain stacked for about a year, when it is ground up and packed into bales, being then ready for garden use. Some 600,000 bales a year are being shipped from the Rivière de Loup bog.

When examined under a microscope, the peat is found to be composed very largely, but not entirely, of Sphagnum leaves and stems. The analogy of the partially rotted rope should perhaps be discarded at this point since the plant parts, although fragmentary, are quite well preserved. Sphagnum leaves are readily recognized because of their distinctive cellular structure. There are slender green cells scattered among larger, dead ones each of which has several round pores in the outer wall. The latter cells fill up with water very readily and serve as minute storage tanks. It is the countless billions of these microscopic tanks in a bale of peat that are primarily responsible for its value as a soil conditioner. As most gardeners know, Sphagnum is capable of holding ten times its weight of water, and the ratio is considerably higher with some species of this moss.

The fact that the peat consists chiefly of Sphagnum might sugest that the shrubby vegetation of heath plants is a recent invasion; however, pollen studies indicate that these plants have long been residents of the bog and have probably had essentially the same degree of dominance they now enjoy. The answer seems to lie, first, in the fact that Sphagnum and the other moss contributors grow faster and consequently contribute much more than is evident at first glance; and, second, in a more rapid decay rate for the leaves of the shrubs so that there is very little left of them by the time they become an integral part of the peat.

Careful studies of borings that have been made of this bog indicate, however, that its career has fluctuated somewhat during the past few thousands of years. Immediately overlying the clay some 25 or 30 feet down is a basal layer of peat in which the remains of a sedge *(Carex)* and a moss known as *Amblystegium* are dominant; above this are 1½ feet of almost pure *Amblystegium* peat; then comes two feet of sedge peat, and from that point on Sphagnum is the chief contributor, although at a level about 7 feet from the surface there are numerous tree stumps which indicate a dry period.

Both commerical and scientific interest in bogs, tundras and muskegs in Canada has increased tremendously in recent years and as studies of them continue we shall learn more of the ways in which they have developed and no doubt devise more ways to use the huge quantities of peat that are known to exist.

Last, but not least, for those of you who may one day find yourselves exploring this bog on your own, at the end of the day you will find dinner at the St. Louis Hotel in Rivière de Loup, a rare treat that will not be soon forgotten.

THE MAGIC OF HERBS

JOHN D. DWYER

THE word "'magic" conjures up a variety of ideas, bringing us to the land of fantasy, or on the other hand to, the shores of the deep and mysterious. It is only natural that man, whatever be the age or the circumstances in which he lived, should have found in the herbs, shrubs, and trees extraordinarily good stage-settings for his dreams and notions concerning the world around him. Perhaps in a bed of lowly pansies he imagines a sea of smiling faces or in the mighty oak towering over his home a symbol of danger and power. Using plants as food and shelter, as medicines (or even as poisons), as ornaments for his home and community, he often views them with a variety of mixed emotions, ranging from a reverence for their omnipotence in his life, to a love for the beauty they bring to the daily routine of living.

Let us reflect on a different environment, imagining an unsophisticated cave-man of 15,000 years ago lifting his moon-struck face toward the whispering forest. With his primitive intellect he reasoned that these trees were the agents of the gods, threatening him, warning him, that they were forces to be reckoned with, yes, even to be revered. How to control these baffling forces of nature which on one hand could be so helpful in providing food and shelter, while on the other hand could wreak such destruction as in fire or tornado, was of constant concern. For him the forces of nature were fickle, capable of harm in varying degrees, like the deadly effects of eating a few seeds of the mottled castor bean, or the annoying rash after touching the poison-ivy vine. Resident in the things of nature were forces beyond his comprehension; witness, for example, how a piece of peat-moss could pick up many times its own weight in water, or how the fruit of the witch-hazel exploded its fruit as if triggered by some elfin finger.

Worship and reverence for the living world about him was natural. We can imagine the cave-man holding aloft the sacred fruit of holly into the glowing face of the sun-god (fig. 1). For him this holly offer was a sacrament blessed by the sun-god and thus demanding worship. He is careful to set the plant between himself and the deity, as if he were afraid to tempt fate too far.

Thus nature represented not only a blessing but an incalculable obstacle with latent dangers at every turn. Those who appeared to possess unusual understanding of these forces were regarded as magicians and, when communities of peoples arose, were appointed to act as intermediaries between the ordinary folk and the unseen deities whose subtle influences guided the destinies of the fauna and flora. Throughout history these magicians have received various titles like "soothsayer", "medicine-man", "witch-doctor" etc. Thus the first

SUN WORSHIP

This scene shows how the stone alignments of Carnac, France, might have been used in ceremonies to welcome dawn by a farmer people living about 4000 years ago.

magicians of recorded history were priest-like in character and function. When science began to awaken in the Middle Ages in Western Europe after a 1200-year sleep, many of the pioneers were classified as magicians since they were probing the deep secrets of the stars, the forests, the stones, etc. Those who sought to gain control over nature for evil ends were regarded as "black magicians" co-operating with evil spirits.

The development of botany during the Dark Ages and Middle Ages was impeded by a great deal of ignorance, superstition, and magic. Despite the fact that the advent of Christianity had brought an immeasurable influence for good, man continued to interpret the plants about him as symbols of his religion, e.g. the clover or oxalis (wood-sorrel) leaf with its trio of delicate leaflets represented the Triune God, while the four-petaled mustard flowers immediately suggested the cross of Calvary. While such an interpretation was salutary, from a religious viewpoint it distracted the observer to a point where he had little interest in studying the plant for its own sake. The stylized sketches of many plants made during the Middle Ages are so poor that it is difficult to make out to which genus the plant belongs. Another element of distraction, existing long before the advent of Christianity, was the philosophy of Plato which recognized abstractions as the only "real" things and that stones and trees were merely shadows of these universals. This de-emphasis of the sense-experience with the things about

him put man in the paradoxical position of sponsoring abstract principles without having gained data from actual sense experience with the plants. Considering some of the abstract types of research going on today in certain areas of science, we wonder whether we can be too critical of these medieval rationalizers.

Another influence of long standing was the so-called "Doctrine of Signatures" which William Cole in the "Art of Simpling" (1656) summed up: "The mercy of God maketh herbs for the use of man and hath not only stamped upon them a distinct forme, but also gives them particular Signatures, whereby a man may read, even in legible characters, the use of them." As we would suspect, man was particularly interested in relations seemingly existing between plants and the diseases of his own body. Thus plants with heart-shaped leaflets would be useful in treating cardiac conditions, or saxifrages, which obviously split rocks as they grew, were considered useful in breaking up gall-stones. Certainly shape and form were not the only signatures; for example the odors of plants, particularly of members like anise and angelica of the Umbelliferae, with their pungent strong aromas, were viewed as therapeutic. Consider today how many lay people consider that a medicine is not effective unless it has a strong odor or taste. Not the least of the signatures was the color of plants, such as saffron with its yellow blossoms which was considered effective in diseases involving bile. Yellow bile was considered for centuries to be one of the four basic humors which regulated the functioning of the human body.

At times the "Doctrine of Signatures" had to be dragged in like a Trojan horse to take care of associations which mushroomed and which had no tradition through the Dark Ages, e.g. when mercury salts were discovered to be effective in the treatment of syphilis, a disease first appearing in Europe at the end of the 15th century. The reasoning is interesting; as syphilis is a disease of the streets and market places, and since Mercury is usually the deity associated with thoroughfares and agoras, it was logical to suppose that the metallic salt named after him would be effective in such a social disorder. Sometimes such associations proved to be valid according to modern scientific studies, although the original rationale was faulty. Willow extracts were considered effective against rheumatism since willows thrived at or near water, the latter environment being considered as pre-disposing toward rheumatism. What we know as aspirin today (acetylsalicylicacid) may be readily extracted from willow *(Salix)* and is effective in giving relief to rheumatics.

One association (not an example of a "signature") which is difficult to understand from a historical viewpoint is that in which frogs and toads are related to mushrooms, particularly to the deadly *Amanita muscaria* (cf. Puharich's *The Sacred Mushroom*, p. 115. 1959). Recent researches have made it clear that the so-called "sweat glands" of an African toad and the flesh of the deadly Amanita have an acid in common, bufotenic acid. It is

unlikely that the medieval alchemists had such knowledge of this acid.

Rituals involving plants and magic are older than recorded history. C. F. Leyel (Magic of Herbs, p. 90) points out, "In evocatory magic (and sorcery is one example) the precautions taken by the initiated are most elaborate. First of all a circle about nine feet in diameter is traced on the ground, and inside this, various symbols and crosses are drawn with a sword dedicated to these rites. Perfumes are burnt, solemn oaths and names are pronounced . . . Certain plants (p. 91) have always been associated with magic . . . and various legends are attached to such mythical plants as the Goose Tree and the Scythian Lamb.

"The Goose Tree or Barnacle Tree was thought to have arisen from fragments of wrecked vessels, which when washed ashore, sprouted into trees whose blossoms formed small deciduous birds; these on falling into the sea 'gathered feathers and grew to the size of a small goose.' "

The Scythian Lamb of Tartary (cf. Alice Tryon's article Mo. Bot. Gard. Bull. p. 25, 1955) was supposed to be a lamb-like animal attached by an umbilical-like structure to the ground; this zoophyte was supposed to have developed from a seed "somewhat bigger and rounder than a melon seed" *(Parkinson's Herbal)*; this weird animal was supposed to have survived as long as it had herbs to feed within the area of its strange tether.

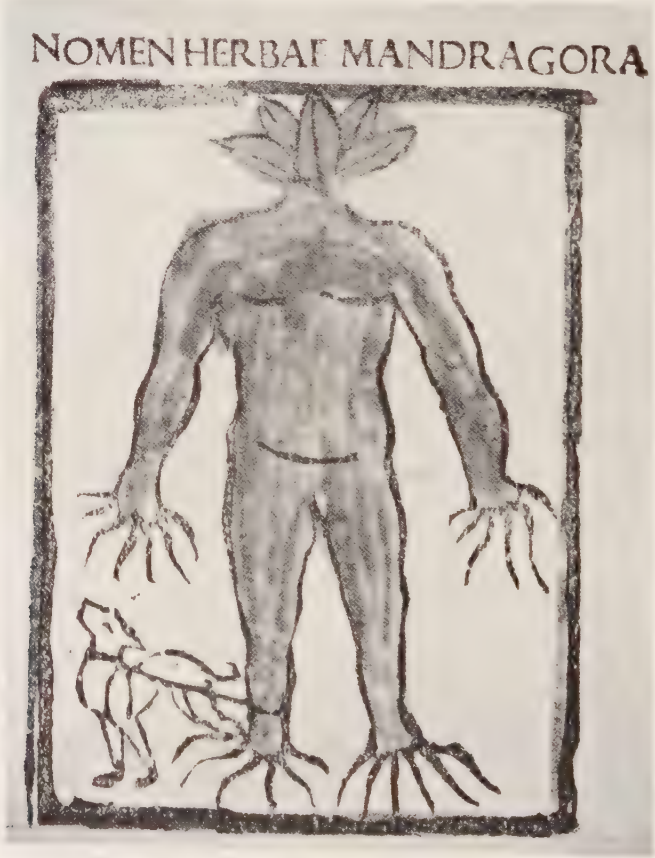
Perhaps the most fascinating of the magical plants was the mandrake of Europe (fig. 2) which for centuries was reputed to have properties of a human. Extracts from the plant were used as a narcotic. In the manuscript herbal of Apuleius Platonicus, a medical recipe book of the 15th century A.D., the collection of the potent principle from the plant is described: "When thou seeth its hands and feet, then tie it up. Then take the other end and tie it to a dog's neck so that the hound be hungry; next cast meat before him, so that he may not reach it, except to jerk the wort with him . . . take it immediately in hand and twist it, and wring the ooze out of its leaves into a glass ampulla."

It is difficult for people who are living in the sophisticated aura of our day to comprehend how so many people could be swayed for centuries by so much mumbo-jumbo and sheer nonsense. This harsh indictment has to be tempered somewhat when we consider that occasionally something that moderns regard as ridiculous, turns out to be very reasonable. For example, the notion in recent times that the application of saliva to a wound, long regarded as assisting in the healing process, was not effective; the recent discovery of a bacteria-destroying enzyme in saliva showed that there was some basis for this traditional belief.

There are many explanations for the perpetuation of myths, in any area of scholarship, especially the general ignorance of the masses in western Europe prior to the rise of medieval cities and universities, and before the invention of the printing press. Ignorance breeds an excessive play of the powers of imagination. Unlettered people with imaginations excited, fall

an easy prey to those who reduce philosophy to confusion and religion to emotionalism. There were many in the medieval period who were expert at this. Lest we seem too critical, we must point out that it was in this same period that some of the greatest philosophers and saints were generated. The habit of the early people who could read and write, to rely on the authority of the ancients, especially on such unreliable sources as the Roman historian Pliny (23–79 A.D.) whose ear fell prey to every weird story circulated in the Forum, was bound to retard education. On the other hand, the tendency to set nature on a pedestal as an object of fear or admiration, without probing inside of it to get a real understanding, was detrimental to the advance of knowledge. Sincere scientists often labeled with the unsavory title of "magician" were driven into the alchemist's den where they had to compromise their yearning for the new science with the clap-trap of pseudoscience.

In conclusion, we must not dismiss the historical records of so-called science in the Dark Ages and Middle



"Mandragora" Mandrake (Herbarium Apulcii Platonici? 1484) from *Herbals, Their Origin and Evolution,* Agnes Arber, Plate V.

Ages as magical and mythical. Consider what happened when the distinguished ethno-botanist Wm. E. Safford in 1915 seemed to have consigned to oblivion the tradition that the upland Indians of Mexico ate hallucinogenic mushrooms, when he said that "the old writers had made a mistake," and that there never were any hallucinogenic mushrooms . . . and that the Spanish "padres" . . . had mistaken the "mescal buttons of peyote for mushrooms" [cf. *The Garden Journal* (N. Y. Bot. Gard.) vol. 8(1):1. 1958]. One of the most interesting sagas of ethno-botany in the last 25 years has been the discovery of such mushrooms, the actual witnessing of the Mazatec Indians of Oaxaca, Mexico, using these in religious ceremonies, and the tremendous interest in the possible use of the narcotic principle of these mushrooms in psychiatric research.

Thus the magic of superstition is often altered by the magic of modern science. Little did the primitive man, gazing over devastated fields of rotting plants and perhaps assigning the destruction to some curse of the gods, realize that one day scientists would find that some species under certain environmental conditions literally destroy themselves by toxic substances released from their root systems.

LIANAS FOR HOUSE PLANTS

JOSEPHINE L. DAVIES

SINCE the beginning of the fifteenth century, and perhaps even before that, we have been decorating our homes with growing plants. Eras have come and gone and we have progressed through various stages, from the humble culinary herb on the window sill to Aunt Maud's *Aspidistra* and the elaborate conservatories of the Victorian age. Nowadays with modern trends and large picture windows, people are taking a renewed interest in growing unusual house plants. New species are being tried which were previously thought to grow only in the greenhouse when away from their natural habitats. Foremost among these are lianas or tropical vines.

An interesting and beautiful group of plants, not often seen in homes, is that of the tropical flowering climbers. Many of them have brilliantly colored flowers. They grow rapidly, make effective house plants and add a new flare of decoration. A little extra time is needed to care for climbers but for those who like to grow something different and enjoy a little experimenting, these are worth the time and patience required.

Perhaps it would be easiest to start with the annual climbers. These are plants which are started from seed, grow rapidly and give a profusion of flowers within a short time, after which they must be replaced.

One of the best annuals to grow is

the "cup and saucer" vine, *Cobaea scandens*, with its cup of violet to rosy purple petals standing in a saucer of pale green sepals. The tendril tipped leaves make a delicate framework for a window. Although the vine grows rapidly it can be controlled by pruning out the wayward shoots. *Cobaea* grows well outdoors in summer and if the seed are sown in September it will flower equally well indoors during the winter.

The cheery bright orange flowers of the Black-eyed Susan vine *Thunbergia alata* will also provide color during the winter months if the seed are sown in the fall. It takes approximately three months for the flowers to develop from seed. Not all the species have black centers in the flowers. A packet of mixed seeds will produce blue, white and orange flowers. *Thunbergia gibsonii* has orange flowers which are twice the size of the other species and *Thunbergia grandiflora* has blue flowers.

Nothing can be so blue as the flowers of the Heavenly Blue Morning Glory, *Ipomea sp.* Unfortunately the flowers are ephemeral but new buds unfurl each morning exposing the large trumpets to the sunshine. The vines twine tightly up a cane or string and do not need to be tied. There are many other colors of Morning Glories, ranging through blue, red, purple, pink and white and there are variously striped ones.

Seed of these annuals grow readily but, if soaked in lukewarm water for twenty-four hours to soften the seed coat, the germination will be hastened. They should be sown about three to four seed to a six-inch pot containing a good soil mixture. After germination of the *Cobaea* and *Ipomea* choose the strongest seedling and remove the others. All the *Thunbergia* seed can be left to grow together in the pot. The plants of all of these can be left to grow to maturity in the same pot.

Among the perennial vines that can be grown indoors, one of the most interesting is the Passion Flower, *Passiflora sp.* This plant was first found by the Jesuits in South America, who gave it the name Passiflora because the strange and beautiful flowers reminded them of the Crucifixion of Christ. The ten parts of the perianth seemed to stand for ten Apostles, the crown of colored filaments resembled the crown of thorns, the five stamens were the five wounds, three stigmas repre-

PHOTO BY P.A.K.

Flower of *Passiflora incarnata*

sented the nails, the long coiling tendrils looked like the whips or cords and the digitate styles resembled the hands of the persecutor. A few species such as *Passiflora caerulea, Passiflora mollissima* and *Passiflora incarnata* are adaptable to room culture. They vary in color from blue to pink or white. Seed of these plants can be obtained or new plants can be grown from cuttings any time from April to September. The Passion Flower should be grown in a large pot. It needs plenty of water during the growing season and should be fed with a liquid fertilizer, using the standard solution, as recommended on the package, once every three to four weeks. February is the pruning time when the weak shoots are cut out and the strong ones are shortened to about one third, or the whole plant may be cut back to two or three buds.

Wax flower, *Hoya carnosa,* makes an excellent and interesting house plant. The thick, dark green leaves are evergreen and the clusters of fragrant, pink and white star-shaped flowers hang their heads. This plant looks effective when grown around a window or twined about three bamboo canes in a pot. *Hoya* will root from the preceding year's growth if taken from March to May. The plant should be watered well from March to September and only moderately from September to March. A liquid fertilizer once or twice a year is sufficient. It should not be given any fertilizer when the buds are forming as this may cause them to drop off. The spurs on which the flowers are born must not be removed as it is on these that the next year's flowers are formed.

A climber that is always a conversation piece is the Glory Lily from tropical Africa, *Gloriosa superba,* and the name suits it well. The orange and red flowers with strap-like reflexed petals, resemble flames or a giant spider. They look very striking in flower arrangements. The *Gloriosa* is not difficult to grow, the small tubers being planted vertically, one to a six inch pot, in February. The pot should be watered moderately at first and then freely as the plant starts growing well. After flowering, the watering is gradually reduced as the leaves die. The soil is kept quite dry until February, when the tubers should be repotted into fresh soil. While dry, the pot may be stored on its side in a dark corner of the basement or a closet. Gloriosas will grow from six to ten feet tall and will twine around a bamboo cane or a trellis, but when young, the rather brittle stems need to be tied up. Like the Passion Flower, the Glory Lily will grow in a shady place but needs the benefit of a sunny window for profuse flowering. A few other species are also grown; *Gloriosa rothschildiana* which has red and yellow flowers; and *Gloriosa virens* var. *plantii* which has yellow flowers touched with red and which is slightly smaller and daintier than the others.

Two plants, native of Mexico, having brightly colored flowers and which need plenty of sunshine are Coral Vine, *Antigonon leptopus* and *Maurandia barclaiana.* Both Coral Vine and Maurandia can be grown from seed. Coral Vine has clusters of

flamboyant, shocking pink flowers, more correctly inflorescences, triangular shaped leaves and climbs by means of tendrils. It should be planted in a large pot and watered freely during the growing season and but little during the winter months. Heavy feeding tends to produce many lush leaves and no flowers, so feeding two to three times a year should be quite sufficient. Maurandia has pretty trumpet flowers of blue, rose and white. It is a plant than can be used either as a trailer or a climber. It grows quickly and has glossy green ivy shaped leaves. It flowers best when its roots are somewhat cramped and therefore should be grown in a fairly small, that is, a four or five inch pot. Liquid fertilizer should be applied at two to three week intervals while the plant is in flower.

Windows other than sunny and south facing can be used for the evergreen leadwort, *Plumbago sp.*, which does not require the bright sunshine to flower. *Plumbago capensis*, the leadwort from South Africa has blue flowers while *Plumbago indica* is a lovely shade of rose. The fragrant white flowered *Stephanotis sp.*, so often a favorite for brides' bouquets, is another handsome plant which can be adapted for such windows.

Large windows with plenty of growing space and sunshine can be used for a very beautiful vine, *Allamanda cathartica*, belonging to the Periwinkle family. This vine has large, lemon yellow flowers with a waxy texture, and leathery, oblong, simple leaves. The Dutchman's Pipe vine, *Aristolochia elegans*, which comes from the river banks of Brazil, will grow in the same location. They both love plenty of sunshine and need to be kept on the dry side in the winter which is the rest period. They require severe pruning in the spring. The Aristolochia has pink, purple and white flowers whose shape resembles an old fashioned smoking pipe. This vine can be grown from seeds but they sometimes take a long period of time to germinate.

A few difficulties may be encountered when growing climbing plants. The actual cultural details are certainly no more demanding than for other flowering house plants. However, being natives of the tropics the plants do like a humid atmosphere. Often our homes, especially with forced hot air heating, are too dry, causing the leaves to drop off. This can be overcome by spraying the plants with water every day, a treatment which will also keep the plants free of dust. Humidity can be kept higher by immersing the pots of plants to a depth of two inches in a metal tray containing two or three inches of pebbles or gravel in which water is maintained. The water then evaporates into the air around the plants. Shallow vessels of water can be placed elsewhere in the rooms especially near the source of the artificial heat.

Light is an important factor and although some of these tropical vines will grow in subdued light, they nearly all need plenty of sunshine to flower properly. At least the flowering branches should be able to reach the sun. A south facing window is ideal. If you do not have such a sunny window then choose a plant

such as Plumbago, Cobaea or Stephanotis which will grow in partial shade.

Vines will need a support on which to climb and sometimes need a helping hand to guide their direction of growth. Try to follow the plant's natural inclination and do not try to force a clockwise twining vine to grow counterclockwise lest both you and the plant become frustrated.

If you have a window with an unattractive view, a curtain of a climbing plant grown right across the window makes a pleasing screen and the sun will filter through the leaves giving a subdued light and cool effect. Passiflora or Cobaea can be used for this purpose. Vines can be attractive when framing a window, especially if the window is recessed and the plants are allowed to climb the walls of the alcove. They can be supported in various ways. A permanent structure such as a wooden trellis is very simple to make by wiring or nailing together bamboo canes or strips of wood. Most of the climbers grow at least six to eight feet and therefore the support should be tall enough to accommodate the maximum growth. Instead of being fastened to the wall, the trellis is sometimes suspended from a hook attached to the ceiling so that it may be easily removed for cleaning. Another method is to drive pins into the woodwork and stretch wire or nylon thread to which the plant can entwine or be attached. Chicken wire, cut into the desired size and shape and sprayed white, makes an attractive backing and support for the plant. Plants can also be grown up single strands of wire, string or thick wool thread, stretched between floor and ceiling. Raffia is best for tying plants because it stretches as the stems expand and so does not cut into them.

No climber, however vigorous, need get out of hand, for judicious pruning will keep it within bounds. Two to three strong stems, chosen and trained into position, are worth more than a tangled mass of small shoots growing in all directions. The majority of climbers will need pruning at least once a year and the time to do this varies with the different vines.

As these plants must remain in the same pots for some time, a good potting mixture at the start is necessary. If not available in your outdoor garden it can be obtained from a reliable horticultural supply firm. Should you want to prepare your own soil, a good mixture is one part sharp sand, two parts loam (good garden soil) and one part peat moss or leaf mold. Approximately one large tablespoon of bone meal per quart measure of soil will be sufficient fertilizer. Applications of liquid inorganic fertilizer can be applied every four to six weeks or as required by the particular plant according to the directions on the package.

Since climbers come from a variety of natural habitats, some may do well under the conditions of your home whereas others may fail. If one does not flourish, try another kind. All are certainly worth a trial. We have mentioned only a few of the more popular sorts of lianas. You may find it interesting to consider further varieties to find some particular one adaptable to your desire and situation.

BOARD OF TRUSTEES

ROBERT BROOKINGS SMITH, President of the Board of Trustees, announced the appointment of Howard F. Baer as a member of the board on December 18, 1959. Mr. Baer is President of the A. S. Aloe Company, and Vice-president of the Brunswick-Balke-Collender Company of Chicago. He is Director of the St. Louis Municipal Opera, Civic Progress, Inc., Blue Cross, St. Louis Union Trust Company, First National Bank, and is a member of the St. Louis Zoological Board of Control.

Mr. Smith also announced the election of Mr. Sam'l. C. Davis to the Board of Trustees early in 1960. Mr Davis is Vice-President of the St. Louis Union Trust Company.

SAM'L. C. DAVIS

PHOTO BY PETER FERMAN

ROBERT BROOKINGS SMITH (second from left), President of Shaw's Garden Board of Trustees, welcomes HOWARD F. BAER to the board after his election, while trustees HENRY B. PELAGER (left) and LEICESTER B. FAUST look on.

BOOK REVIEWS

Grow Cacti. By Cyril Marsden. Cacticulture Series No. 1, Second Edition. St. Martin's Press, New York. 178 pages, 1958. Price $4.50.

MARSDEN's cultural handbook appears to be well written as it provides a wealth of information, especially for the beginner. Most of the chapters are extremely concise but nevertheless tend to convey explicit knowledge gained by the author over a period of years.

Cyril Marsden is a chemist by profession and this is quite evident in the analytical type of writing embodied in his chapters on composts, soilless culture, potting, watering and general care. In fact, he incorporates a great deal more on chemistry than most books of this type which have already been published. He apparently has done much research on nutrients and soil mixtures for cacti but I also have a feeling that he makes a complicated matter of this by suggesting too many formulas. After all, cacti are not as fussy as he would lead one to believe and I'm sure others will doubt the need for so extensive a selection of composts as he advocates. The group of chapters on classification, distribution, dictionary of botanical terms, common names and month-by-month review is a useful addition to this kind of book as it makes *Grow Cacti* one of the most complete volumes of its kind written to date.

There is a brief chapter on photography in which the author states that "it is easier to take poor, than good photographs of cacti" and he certainly proves his point as some of the illustrations in the book could easily have been left out. Both the monochromes and the color pictures lack sparkle and the subjects are often lost in a fuzz of poor definition.

—LADISLAUS CUTAK

Venezuelan Orchids Illustrated, vol. 1. By G. C. K. Dunsterville and Leslie A. Garay. Andre Deutsch Ltd., London. 1959. 448 pp. $15.00.

ANYONE who attempts to identify orchids or deal with orchid nomenclature soon learns of the difficulties in this field. There has been little systematic (monographic) study of the family. The published descriptions are often vague and contradictory, museum specimens of the orchids are much too few, and even when these are available, the crushed and dried flowers are none too informative. One finds that a detailed drawing prepared from living plants is often the best substitute for the living plant itself. In this volume we have very nearly the ideal arrangement. A highly skilled artist has prepared the drawings from living plants and (should the botanist seek some detail which the artist overlooked) museum specimens have been prepared of these plants in each case. Careful descriptions and locality data accompany the drawings, so that they have the highest possible botanical value. This volume should do much to still the cry of "but what can I do? I'm just

an amateur." This beautiful work is pre-eminently the work of an "amateur" and has been accomplished in the relatively short period of seven years. Clearly, the "amateur" is limited only by his own energy and inclinations.

The introductory pages are brief, and include a general discussion of the orchid family, its relationships and flower structure. Of special interest is the section on variation within species. Only recently have we begun to appreciate the fact that the orchid species are populations of many individuals in nature. The specimens which we observe in the greenhouse and museum are at best very small samples of the natural population. The orchids illustrated here were identified by Leslie Garay, using the extensive facilities of the Orchid Herbarium of Oakes Ames, so that the names used are as correct as is possible at this date. Synonymies are given, which greatly increases the value of the work for botanist and amateur alike. The authors have tried to avoid unnecessarily complex terminology, and a glossary is provided for those more or less technical terms that are used.

The book is published in London, though the actual printing was done in Holland, and is of high quality throughout. Some typographic errors are to be found, largely, one suspects, the inevitable result of having the publisher in Europe and the authors in Venezuela and the United States. Very few of the errors are serious, though the repetition of the same footnote with each of the 200 descriptions seems a bit superfluous. The 200 full page drawings represent 67 different genera, and many of the species are here illustrated for the first time. The sixteen color photographs in the introductory section are uniformly excellent and well reproduced.

We are told that further volumes are to be published in this series. It is probably too much to hope that all of the thousand or more species of Venezuelan orchids will eventually be illustrated, but in any case every volume will be eagerly sought by all true orchid lovers.

—Robert Dressler

MISSOURI BOTANICAL GARDEN PROGRAMS

SPECIAL Shows and Displays:
Daffodil Show April 8 and 10
Easter Display April 17
African Violet Display May 7 and 8
Spring Flower Show May 21 and 22

Free Nature Programs for children, aged seven and over, are held every Saturday morning from 10:00 to 11:30 A. M.

Sowing Seed for Your Garden April 2
Flower Shapes and Names April 9
Hunting for Hidden Flowers April 16
Spring Safari April 23
More About Your Garden Seeds April 30
Plants from Prehistoric Times May 7
Planting Your Garden May 14
Color Sound Movies May 21
Plants with Wet Feet May 28

Free summer programs of nature study for children are supported by a gift from the Pitzman Foundation. Trails, craft work, and group activities are offered. Schedules of these programs may be obtained in June at the Main Gate.

COURSES

The following courses are open to any interested person. Certificates are awarded upon the successful completion of any course.

Information on registration may be obtained by calling
PRospect 6-5567
Please send all registration fees to
Missouri Botanical Garden
2315 Tower Grove Avenue
St. Louis 10, Missouri

Registration fees cannot be refunded after the last day of registration for any particular course.

The courses will meet in the classroom of the Garden's Museum Building.

To reach the Museum, enter the Garden through the walk-in gate opposite Cleveland Avenue at 2221 Tower Grove Avenue, the building on the left.

BOTANY

Course 101. Spring Wild Flowers of Missouri.

Place: Museum Bldg.

Time: Five Monday nights, 7:30 to 9:30 P. M., starting April 11.

Fee: $15 for the five sessions.

Enrollment: Limited to 18 students. (Additional sections will be opened if necessary.)

The aim of this course will be to teach basic flower terminology and the use of Steyermark's "Spring Flora of Missouri" by examination of as many different species of native plants as possible. At least one class meeting will be a field trip to the Garden's Arboretum at Gray Summit on a Saturday afternoon. The flowers studied will include representatives of shade trees and shrubs.

Two small texts will be provided; more comprehensive treatises will be available.

Instructors: Dr. N. H. Nickerson, Dr. Robert Dressler.

Course 103. Ferns of the St. Louis Area.

Place: Museum Bldg.

Time: Five Thursday nights, 7:30 to 9:30 P. M., beginning April 28.

Fee: $15 for the five sessions.

To the person interested in unusual plants, ferns offer a unique opportunity; with relatively little effort, one may become acquainted with all species native to a particular region. This course includes some details of fern structure and life history, methods of recognition of species native to the area, and observations on environmental situations in which individuals of the various species may be found and grown in living collections. One class meeting will be a field trip to the Garden's Arboretum at Gray Summit on an afternoon to be mutually arranged. No previous knowledge of ferns is required.

Instructor: Dr. George Bunting.

Course 123. Modern Horticulture for Home Gardeners I.

Place: Museum Bldg.

Time: Five Wednesday nights, 7:30 to 9:30 P. M., starting April 20.

Fee: $15 for the five meetings.

Enrollment: Limited to 20 students.

The material to be covered by this course will complement the subject matter in Course 128. Each course may be taken independently. Subject matter includes discussions on shade trees, shrubs, evergreens, lawns, house plants and greenhouses. Each evening will feature both practical and classroom work. Students may take home plant material at the end of each meeting.

Instructor: Mr. Robert J. Gillespie.

ORCHID CULTURE

Course 141. Orchid Culture in Home and Greenhouse.

Place: Museum Bldg.

Time: (Register for only ONE of the sections offered.)

Section I.—April 16, 10:00 A. M.

Section II.—April 23, 10:00 A. M.

Fee: $10 for one meeting.

Schedule:

10:00 A. M.: Orchids suitable for home culture and the best ways of growing them. Potting demonstrations.

12:00 Noon: Lunch. Garden supplies coffee and soda.

1:00 P. M.: Growing orchids in unusual containers in the home. Basket slabs, poles, and the like, with examples and demonstrations of potting and care.

2:00 P. M.: Inspection of greenhouses.

3:00 P. M.: Individual potting instruction by members of Orchid Department staff. Students may take potted plants home.

Instructor: Mr. Robert J. Gillespie.

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SOME FACTS ABOUT SHAW'S GARDEN

The Missouri Botanical Garden (the official name chosen by Mr. Shaw) carries on the garden established by Henry Shaw over a century ago at TOWER GROVE, his country home. It is a private institution and has no support from city or state. The old stone walls and cast-iron fences, the Linnaean House, the Museum, the Mausoleum, and the TOWER GROVE mansion all date from Mr. Shaw's time. Since his death, as directed in his will, the Garden has been in the hands of a Board of Trustees who appoint the Director.

The Garden is open every day in the year (except New Year's and Christmas) from nine A. M. until seven P. M. spring to fall and until six in the winter time though the greenhouses close at five. TOWER GROVE, itself, Mr. Shaw's old country home, is open from one until four, admission fifty cents, with special guides. The Garden is nearly a mile long and has several entrances. The Main Entrance, the one most used by the general public, is at Tower Grove and Flora Place on the Sarah bus line (No. 42). The Park Southhampton buses (No. 80), direct from downtown, pass within three blocks of this entrance and stop directly across the street from the Administration Building at 2315 Tower Grove Avenue. The latter is the best entrance for students, visiting scientists, etc. It is open to such visitors after 8:30 A. M., but is closed on Saturdays, Sundays, and holidays. The Cleveland Avenue gate, 2221 Tower Grove, is nearly always open, and there is a service entrance on Alfred Avenue, one block south of Shaw Avenue.

Since Mr. Shaw's time an Arboretum has been developed at Gray Summit, Mo., State Highway 100 adjacent to Interstate Highway 44. It is open every day in the year and has auto roads as well as foot trails through the wild-flower reservation. There is a pinetum and an extensive display of daffodils and other narcissi which are at their best in April.